

CLAIMS

1. An additive for a non-aqueous electrolyte in a battery composed of a phosphazene compound represented by the following formula (I):



(wherein Xs are independently a halogen element, and n is an integer of 3-15) and containing at least two kinds of halogen elements.

2. An additive for a non-aqueous electrolyte in a battery according to claim 1, wherein the phosphazene compound contains
10 fluorine and chlorine.

3. An additive for a non-aqueous electrolyte in a battery according to claim 2, wherein Xs in the formula (I) are independently fluorine or chlorine.

4. An additive for a non-aqueous electrolyte in a battery
15 according to claim 1, wherein n in the formula (I) is 3-5.

5. An additive for a non-aqueous electrolyte in a battery according to claim 3 or 4, wherein n in the formula (I) is 3, and one to three of six Xs is chlorine and the others are fluorine.

6. An additive for a non-aqueous electrolyte in a battery
20 according to claim 3 or 4, wherein n in the formula (I) is 4, and one to five of eight Xs is chlorine and the others are fluorine.

7. An additive for a non-aqueous electrolyte in a battery according to claim 5 or 6, wherein the phosphazene compound contains at least two chlorine atoms in its molecule, and each of the
25 chlorine atoms is bonded with a different phosphorus atom, respectively.

8. An additive for a non-aqueous electrolyte in a battery according to claim 1, wherein the phosphazene compound has a freezing point of not more than -5°C .

30 9. A non-aqueous electrolyte for a battery comprising an additive for a non-aqueous electrolyte in a battery as claimed in any one of claims 1-8, an aprotic organic solvent and a support salt.

10. A non-aqueous electrolyte for a battery according to

claim 9, wherein a difference of a boiling point between the aprotic organic solvent and the additive for the non-aqueous electrolyte in the battery is not more than 25°C.

11. A non-aqueous electrolyte battery comprising a
5 non-aqueous electrolyte for a battery as claimed in claim 9 or 10, a positive electrode and a negative electrode.